

REMARKS

The Examiner has objected to the specification as lacking Serial Numbers for certain applications which are incorporated by reference. The applicants have amended the specification accordingly.

The Examiner has objected to the claims as lacking support in the specification for the term “optical fiber”. The applicant notes that page 2, line 6, page 6, line 27, page 8 lines 30, and 33 all refer to optical fibers. In addition, the incorporated cases such as U.S. Patent #6,023,340 to Wu et al. refer to probes utilizing optical fibers. Thus, the specification and the incorporated material do provide sufficient support. Nonetheless, minor amendments have been made in the claims with regard to this point for clarification purposes only.

The Examiner has objected to the Figures as including reference values not described in the specification. The applicants have amended the specification to provide the necessary description. No new matter has been added. In particular, reference is now made specifically to the .385 with respect to Figs. 2a, 3a, 4a, and 4b and to the .28 with respect to Figs. 3c and 4b. With reference to the .60 in Fig. 2d and in Fig. 3c, the applicants respectfully traverse the Examiner’s objection and refer the Examiner to pg. 8, line 3, and pg. 9, line 4 of the specification which mentions tapering over a distance of about .6 mm. Likewise, with reference to the 1.0 of Fig. 4b, the applicants respectfully traverse the Examiner’s objection and refer the Examiner to pg. 9, line 21. Finally, with

respect to Fig. 3c, the applicant has highlighted in yellow the notation in the existing Figure of the 5 degree taper; and thus, the applicant respectfully traverses this objection as well.

The Examiner has rejected claim 18 as being anticipated by Sahagen. The applicants have amended claim 18 to require that the distal end of the probe be arranged as a paraboloid or as a hemisphere. As the Examiner has not pointed to any of the prior art as teaching or suggesting such an arrangement, it is respectfully submitted that claim 18 is allowable over the art of record. In particular, it is noted that while Sahagen describes the ends of the fibers of Figs. 9, 11, and 12 as being “spherical”, clearly, the “spherical shape of radius R” described at Col. 12 of Sahagen is not a *hemisphere*. Rather, it is a small portion of a sphere, as the radius R is much larger than the diameter of the fiber (see Figs. 11 and 12). It is noted parenthetically that Bonham (5,598,493) also does not teach a probe having a hemispherical distal end as the hemisphere described in the Background section of Bonham is a lens and not a probe. In particular, the hemispherical microlens described by Bonham is formed by separating a tip portion of a fiber from the fiber and melting it into a hemispherical microlens. Thus, the Bonham microlens does not amount to the claimed probe having a hemispherical distal end.

The Examiner has rejected claim 22 as being anticipated by Adelman. The applicants have amended claim 22 to be directed to a well logging apparatus for investigating a fluid stream flowing in the well, including a tool suspended in the well, with the tool including the recited optical probe. It is respectfully submitted that

Adelman is directed a gynecological tool which is not intended to investigate a fluid stream, and certainly does not include a tool suspended in a well. Therefore, Adelman does not anticipate claim 22 as amended. In addition, it is respectfully submitted that those in the well logging arts would not have incentive to look to the medical arts for such teachings, and thus Adelman does not suggest the presently claimed apparatus.

The Examiner has rejected claims 1, 2, 5, 6, and 23 as being obvious over Sahagen (5,526,112). The applicants have amended claim 1 and 23 in a manner which clearly defines over Sahagen. The Examiner argued that the square distal end of the Sahagen probe presents a cubical corner. However, clearly, the cubical corner of Sahagen has planes which are parallel to a plane through the longitudinal axis of the probe, which is different from the arrangement shown in the Figures and presently claimed. Therefore, it is respectfully submitted that claims 1 and 23, and all claims dependent thereon are clearly allowable over the art of record. Thus, the applicants will not argue the appropriateness of some of the other obviousness rejections, as they should be moot. However, it is noted for the record that the Examiner's rejection of claim 2 was not correct because the word "aligned" as claimed is defined by dictionaries as "in a line", and therefore it is unfair to argue (as the Examiner did) that something could be "aligned perpendicularly" and meet the limitation "aligned".

Claims 11-14 have been rejected as being obvious over Mononobe (6,236,783). According to the Examiner Mononobe teaches a distal end comprising three conical sections tapering by varying amounts, and a sharp tip. The applicants have amended

claim 11 to recite that the distal end of the probe is arranged as a substantially uniform cone having a face angled at $45^{\circ} \pm 2^{\circ}$. Clearly Mononobe teaches away from this arrangement. To the extent that Mononobe teaches wide ranges of tapering angles, a selected angle of a portion of the Mononobe probe might have a face angled at $45^{\circ} \pm 2^{\circ}$ relative to the longitudinal axis. However, since Mononobe is teaching providing a probe having a non-uniform arrangement with multiple tapers, and is teaching this arrangement for different applications (optical microscopes), it is respectfully submitted that Mononobe neither teaches nor suggests the claimed arrangement. Thus, claim 11 and the claims dependent thereon are clearly allowable over the art of record. Again, it is noted that the applicants will not argue the appropriateness of some of the other obviousness rejections combining Mononobe with other references, as they now should be moot.

The Examiner has rejected claim 19 as obvious over Sahagen in view of Bonham (5,598,493). The applicants respectfully traverse this rejection because, as set forth above, Bonham (5,598,493) does not teach a probe having a hemispherical distal end. The hemisphere described in the Background section of Bonham is a lens and not a probe. In particular, the hemispherical microlens described by Bonham is formed by separating a tip portion of a fiber from the fiber and melting it into a hemispherical microlens. Thus, the Bonham microlens does not amount to the claimed probe having a hemispherical distal end (i.e., there is no teaching in Bonham that the end of a fiber should be hemispherical in shape), and there is no suggestion as to how or why one skilled in the art could use the teaching of Bonham to modify Sahagen.

The Examiner has rejected claim 24 as being obvious over Sahagen in view of Adelman. The applicant respectfully traverses this rejection for two reasons. First, claim 24 is dependent on claim 23 which is allowable for the reasons set forth above. Second, it is respectfully submitted that the obviousness rejection is a hindsight rejection combining medical and fluid medium monitoring arts. As set forth above, Adelman is not directed to investigating a fluid medium. Since there is nothing in Sahagen suggesting that probes of different configurations/resolutions is desirable in monitoring fluid flow, the incentive provided by the Examiner to use the medical teaching of Adelman to modify Sahagen is a made-up incentive which improperly relies on hindsight as opposed to what might be reasonably gleaned by one skilled in the art from the references.

The Examiner has rejected claim 25 as obvious over Adelman in view of Allison et al. (5,812,729). The applicants respectfully traverse this rejection for the following reasons. First, as amended, claim 25 is directed to a well logging apparatus which is suspended in a well. Clearly, neither Adelman nor Allison et al. are directed to such an apparatus, and it is respectfully submitted (as previously set forth) that there would be no incentive to those in the well-logging arts to be looking to the medical apparatus arts to obtain solutions regarding investigating fluid flowing in a well. In fact, it is submitted that neither Adelman nor Allison et al. are concerned about investigating flowing fluids at all. Second, it is submitted that the combination of Allison et al. with Adelman is a hindsight rejection. Adelman teaches to have probes of different aperture (e.g., one with

aperture .099, and another with aperture between .3 to .8). The fact that Allison et al. teaches that numerical apertures may be above .8 (e.g., .92 and above) in a light transmitting device does not in any way suggest that Adelman's arrangement should be changed except with a *post facto* analysis. Indeed, it may be reasonably argued that Adelman teaches away from having any aperture above .8 as such as small aperture would not be useful for Adelman's purposes. Thus, the incentive provided by the Examiner is counter to Adelman's teaching, and is hindsight attempt to reconstruct the invention.

In light of all of the above, it is submitted that the claims are in order for allowance, and prompt allowance is earnestly requested. Should any issues remain outstanding, the Examiner is invited to call the undersigned attorney of record so that the case may proceed expeditiously to allowance.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "David P. Gordon".

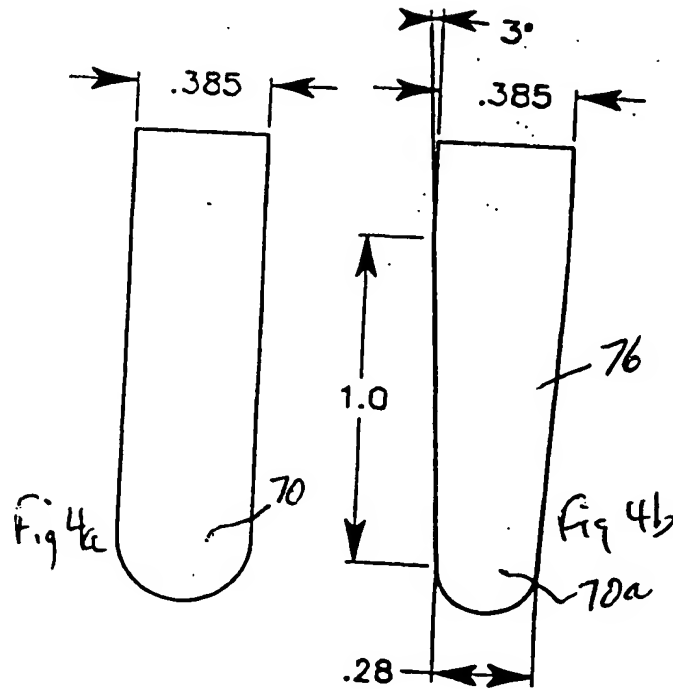
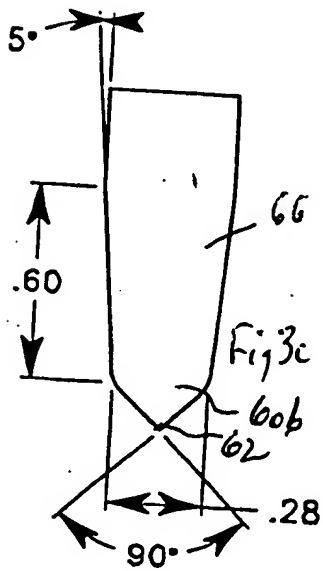
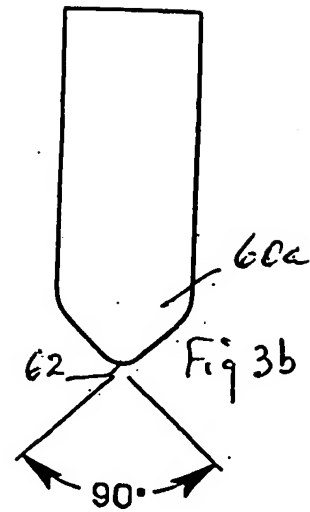
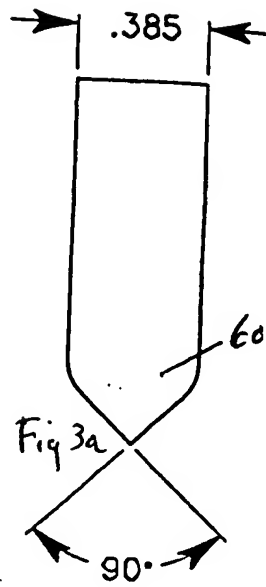
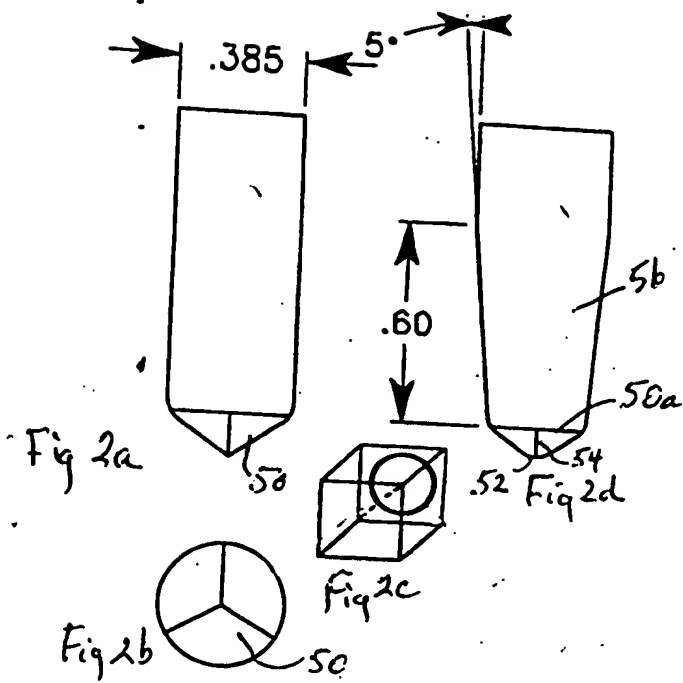
David P. Gordon
Reg. No. 29,996
Attorney for Applicant(s)

GORDON & JACOBSON, P.C.
65 Woods End Road
Stamford, CT 06905
(203) 329-1160

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